

Linewidth Analyzer

LWA-1k 1550



HighFinesse
Laser and Electronic Systems

Wavelength range

1530 – 1565 nm

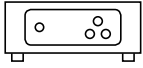
Required input power¹⁾

0.5 – 5 mW

Input power stability

5 %

1) Best performance with maximum input power. Noise sensitivity scales inversely with input power.



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Analyzer Unit

Laser type	CW and single-mode
Input type	PM-FC/APC fiber

Spectral and frequency noise specifications

Optical frequency resolution	1 kHz
Frequency noise bandwidth	10 Hz – 10 MHz
Frequency noise sensitivity	< 10 Hz/ $\sqrt{\text{Hz}}$ – 10 MHz/ $\sqrt{\text{Hz}}$
Intrinsic linewidth range ³⁾	< 350 Hz
Effective linewidth ²⁾ range (β -separation)	< 2 kHz – 10 MHz
Relative intensity noise limit	-150 dB/Hz

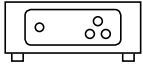
Lineshape specifications

Effective linewidth ²⁾ range (FWHM)	< 2 kHz – 4 MHz
Optical frequency resolution	2 kHz
Dynamic range	50 dB

Miscellaneous

Interface	USB 2.0 Type B
Analog Output / error signal ⁴⁾	BNC ± 7.5 (50 Ω) ± 15 (high impedance) V, single ended
Cutoff (highpass filter)	10 Hz, 1 kHz, 10 kHz, 100 kHz
Dimensions	220 mm \times 334 mm \times 96 mm
Weight	8 kg

- 2) Effective linewidth: Combination of intrinsic linewidth and additional broadening mechanisms (thermal, electrical and acoustic noise). Determination by β -separation method (noise density spectrum) or curvefitting procedure (lineshape spectrum).
- 3) Intrinsic linewidth: Limited by fundamental quantum processes and laser design. Determined by the noise floor (white noise) of the frequency noise spectrum and calculated by: noise density (in Hz²/Hz) times π (rule of thumb). This value is most commonly denoted as “laser linewidth” by laser manufacturer.
- 4) Linewidth reduction/control: Analog output as error signal for use in combination with PID controller (not included) for frequency noise or RIN reduction.



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Digitizer Unit

Sample rate	62.5 (max.) Sa/s
Resolution	16 bits
Acquisition time	0.1 (typ.) s
Evaluation time	< 1 (typ.) s

Miscellaneous

Communication	USB 3.0 type B
Dimensions	210 mm × 200 mm × 74 mm
Weight	2 kg

Software

Operating system	Microsoft® Windows® (7 – 10), 64 Bit
CPU (minimum)	Intel® Core™ i5 or equivalent
Memory (minimum)	8 GB
Graphical Evaluation options	Frequency noise density graph, lineshape graph, frequency deviation distribution (histogram)

Further Information

For further technical information, application examples, diagrams and for customisation of linewidth analyzers please contact:

Dr. Alexander Konrad
service@highfinesse.de



HighFinesse GmbH
Wöhrdstraße 4
72072 Tübingen, Germany



T + 49 (0) 7071 - 53918 0
F + 49 (0) 7071 - 5391899
M info@highfinesse.com



Additional information
and distributors:
www.highfinesse.com